THE FUTURE OF VIRTUAL HEALTH

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CHIEF DIGITAL OFFICER & VICE CHAIR FOR CLINICAL AFFAIRS
Prisma Health

18 Hospitals
30K Team members
330 Physician practice sites
S.C.’s Largest health employer
45% of S.C. within 15 minutes of us

- 2,984 licensed beds
- 201 NICU bassinets
- 2 Level 1 Trauma Centers
- 2 Comprehensive Stroke Centers
- 2 affiliated medical schools
- 2 affiliated nursing schools
- 50 residency & fellowship programs
- 560 residents/fellows
- 800 clinical research trials
- 70% of our post-graduate residents stay in S.C. to practice
The Big Opportunity: Transform Healthcare in SC

Challenges to health status in South Carolina

- Obesity increased by 11%
- 45th for low birthweight
- 46th for diabetes
- 36th for smoking
- 45th for children living in poverty

Consumers in Upstate and Midlands spend $19 Billion* per year on health care

Updated Numbers based on America’s Health Ranking 2018 Annual Report.
*Kaiser Family Foundation estimate of SC per capita spend on health care is $7,311. There are 2.6 million people in the Upstate and Midlands of SC (51% of the state’s population).
DIAGNOSIS BY RADIO
See Page 978

Science and Invention Magazine, February 1925
**Healthcare Maturity Model**

- **Healthcare 1.0**
  
  - Volume-based reimbursement.
  - Paper RULES. Manual auditing.
  - Handwritten notes >90%.
  - Pagers. House call. Verbal orders >50%. Doctors are abundant, APP's are rare. Lack of diversity in the profession.
  - Closed one-way system. No resident work hour limits.
  - Reimbursements are high. High cost of care centers grow.

- **Healthcare 2.0**
  
  - IT becomes the biggest and quickest growing expenditure.
  - HIE 1.0

- **Healthcare 3.0**
  
  - Consumer focused. Consolidated healthcare systems with integrated next-gen EHRs.
  - Open HIE. Patient facing apps.
  - 100% Value Based Care, and Virtual Health >50% of visits.
  - Hospital shrink, ambulatory care RULES. Automated clinical pathways. APP’s scope of practice increases. Data/AI for predictive modeling and precision medicine. RPA!!

**The evolution of Healthcare will NOT occur overnight !!**
The Anatomy of a Healthcare Dollar

Ave. 2-2.5% Margin

- Staffing
- Supply Chain
- Overhead: Office space/leases
- No shows/Volume
- Reduced reimbursement/Payor Mix

- Procedures
- CCM
- HCC/AWV
- Quality/ Care Gaps
- Volume
- Coding
- HAI’s/HCAPs
- Shared Risk
Quadruple aim

01 Patient Experience
02 Population Health
03 Reducing Costs
04 Care Team Well-being
Healthcare by the numbers

• 2015 : 990 Million Encounters
  • 61% had one or more chronic conditions
  • 125.7 Million hospital visits
• 51% were in Primary Care
  • 204,000 PCPs
  • 37% Solo practices
• Healthcare expenditure in U.S. $3.5 Trillion Dollars
  • $10,739 per person
  • 18% GDP
  • 4% year over year growth

“Healthcare costs have become a ‘tapeworm’ on the US economy.”
–Warren Buffet
Primary care and Population health

• 2005-2016
  • Total number of primary care increased to 196K to 204K
  • Overall density decreased from 4.6/100,000 to 4.1/100,000
  • Largest decline was in rural counties

• 10 additional PCPs/100,000 showed an increase in 52-day life expectancy
  • Reduce mortality in respiratory, cardiovascular, and cancer by 0.9%
• 10 additional specialty/100,000 showed only increase of 19 days in life expectancy
### Business challenges and tech benefits

<table>
<thead>
<tr>
<th>Business challenges</th>
<th>Projected EHR benefits</th>
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<tr>
<td><strong>Growing population</strong></td>
<td>Improving access – web portals, e-visits, online scheduling</td>
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<td>Population health management</td>
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<td><strong>Rising costs, errors</strong></td>
<td>Reduce duplicate labs/imaging by having access to real-time information</td>
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<td>E-visits</td>
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<td>Health information exchange (HIE)</td>
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<td>Eliminates handwriting errors</td>
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<td>Built in fail safes (med interaction alert)</td>
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<td><strong>Lower reimbursements</strong></td>
<td>Better documentation/Quality/Leapfrog/HEDIS</td>
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<td>Patient-centered medical home certification</td>
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<td>Value Based Care / At-risk contracts</td>
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<td>NCQA certification – Diabetes, stroke, etc.</td>
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HIT productivity paradox

EHR implementations initially cut productivity by 25-33% – UC Davis (2010)

Top reasons for productivity drop from adopting EHRs
1. More time documenting (85%)
2. Less time for patient care (66%)

IDC Health Insights Physician Survey
Unintended EHR consequences

| Decline in productivity | Loss of revenue  
| | Staff dissatisfaction  
| | Longer work hours  
| | Reduced access to care  
| Patient dissatisfaction | Worsening survey scores (CGCAPS/HCAPS)  
| | Loss of patients  
| | More ER visits  
| Higher expense | IT support  
| | Hardware/software upgrades  
| | Less innovation  
| | Practice/hospital closures  |
Carbon Health banks another $350M to become 'largest primary care provider in the U.S.'

**Carbon Health** has doubled its full-time staff from 800 to 1,600 employees, opened over 80 clinics in 12 states and expanded its virtual care services to 23 states, the startup said. While Carbon Health services are currently available to more than three-quarters of those living in the U.S., the company said it’s looking ahead toward a goal line of 1,500 clinics by 2025 “to become the largest primary care provider in the U.S.”

**Crossover Health** focused its initial efforts on the west coast and then expanded to the Northeast, and throughout Texas but has now expanded across the country with over 50 physical locations. As a result, Crossover Health now has 400k+ eligible lives (110k from Amazon) across the country with ~40% engagement, 25% actively engaged, and for those who have engaged for a service, 67% are saying this will be their medical home.

**Dispatch Health** is the largest and most complete platform that enables delivery of high acuity medical care (typically delivered in a hospital setting) to the home with an on-demand team that has all the tools to substitute for an emergency room visit which includes ancillary services such as lab services, X-rays, and ultrasounds.
The Digital Health Revolution
Projected number of office visits

Office
1B
990M
980M
960M
930M
900M
870M
820M
760M
740M
690M
600M

2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025

40M
50M
60M
80M
120M
160M
230M
330M
500M

Virtual
1.15B

Fortune Magazine, “Here’s What Your Future Doctor Visits Could Look Like” - May 2, 2017

CONFIDENTIAL
Overall Trends in Digital Health 2020-current

- Telehealth visits were up 154% in the last week of March 2020 compared with the same period the previous year. (CDC)
- 46% of patients now say they use telehealth for some visits, compared to 11% in 2019. (McKinsey)
- 48% of physicians now say they are treating patients via telemedicine. (Merritt Hawkins)
- More than 20% of U.S. medical visits are expected to be conducted virtually this year. (Doximity)
- Telehealth use by rural health centers increased during the pandemic, peaking at 54% in the last week of April. Use declined to 26.7% by October — still well above the 0.4% reported in 2019. (RCHN)
The financial value of telemedicine visits is expected to reach at least $29.3 billion in 2020 and experts project that it will hit $106 billion by 2023. (Doximity)

Investors poured $9.4 billion into digital health startups through Q3 of 2020, with an estimated $12 billion in total investment by the end of the year. That’s a 46% investment increase over the previous record of $8.2 billion for 2018. (Rock Health)

Deals are getting larger, with an average deal size of $30.2 million in 2020, up from $19.7 million in 2019 — a whopping 53% increase. (Rock Health)

Non-healthcare companies, including big tech, are entering the virtual care space with Google investing $100 million in telehealth provider, Amwell (CNBC), and Microsoft launching a $40 million initiative AI for Health (Microsoft).

Up to $250 billion of the current U.S. healthcare spending could eventually shift to virtual. (McKinsey)

In the biggest telehealth business deal in history, Teladoc announced the acquisition of diabetes management provider, Livongo, for $18.5 billion. (Fierce Healthcare)
Patient Adoption

• The number of patients reporting at least one telehealth visit has increased by 57% since the start of the pandemic. Patients with chronic illnesses report a 77% increase in the use of telehealth. (Doximity)

• Nearly half (43.5%) of Medicare beneficiaries’ primary care visits were provided via telehealth in April of 2020. Compare that to the 0.1% utilization before the public health emergency. (HHS.gov)

• During the pandemic, most telehealth patients were adults between the ages of 18 and 49 (69%), and female (63%). (CDC)

• 93% of patients say they would be likely to use telemedicine to manage prescriptions. (Doctor.com)

• 83% of patients say they are likely to continue using telemedicine after COVID-19. (Doctor.com)

• 28% of patients surveyed said they would like to access telehealth whenever possible, even if their insurance did not cover it. (Kyruus)

• In a survey of more than 1 million patients, 89% would recommend their provider after having had a telemedicine visit. (Harvard Business Review / Press Ganey)
Provider Adoption

• The number of physicians reporting telehealth as a skill increased by 38% in 2020, up from a 20% increase each year between 2015 and 2018. (Doximity)

• Female physicians are adopting telehealth at a faster rate than men. Women were 10% more likely than men to use telemedicine in their medical practice in 2019 and 24% more likely in 2020. (Doximity)

• More than three-quarters of physicians surveyed said telemedicine helped them provide better care for patients. (COVID-19 Healthcare Coalition)

• Providers are now seeing 50 to 175 times the number of patients via telehealth than they did before COVID. (McKinsey)

• Among physicians who provide telehealth services, 64% say they conduct visits from home. (COVID-19 Healthcare Coalition)

• 57% of providers say they now view telemedicine more favorably than before the pandemic, and 64% say they are more comfortable using telemedicine. (McKinsey)
Service Line Utilization

• By April of 2020, nearly all primary care physicians (97%) were using telemedicine to treat patients. (Bain & Company)

• 75% of cardiology outpatient encounters shifted to telehealth within just two weeks. (Journal of the American College of Cardiology)

• Outside of behavioral health, endocrinology and rheumatology were the top two specialties using telemedicine this year. (Doximity)

• Among behavioral and mental health clinicians, 94% said they would like to continue offering these services virtually after the pandemic. (COVID-19 Healthcare Coalition)

• Among patients, 48% said they would use telemedicine to seek care for allergy, ear, nose, or throat conditions, 45% for routine preventive care, and 45% for mental or behavioral health care or counseling. (Doctor.com)

• 73% of physicians said they would like to continue offering chronic disease management visits to patients via telehealth after COVID-19. Other virtual services they planned to continue included medical management (64%), care coordination (60%), and preventive care (53%). (COVID-19 Healthcare Coalition)
WHAT’S NEXT?
BEYOND VIDEO

- Artificial Intelligence
- Next Gen Kiosks
- Robotic Process Automation
- Virtual Reality
- Wearables/Smart Home
Digital Health Continuum

- **Data**
  - EHR, EDW, RPM, CRM, Pop Health, AI, ML, NLP, RPA

- **Chat Bot**
  - First line and Triage

- **Escalation**
  - First line/Afterhours

- **Asyn**
  - In-Office Virtual Health Stations, Kiosks

- **Video**

- **Office/Acute**
Key Components

Patient-centered
360 Experience
24 by 7 access
Linkage to Value and Outcomes

Hardware agnostic
Cloud-based
Broadband
Mobile App-based

Seamless workflows
Key system integration
Clean Data
Affordable
The patient journey: Traditional v. Traditional + Digital

- **Ambulatory**
  - Primary Care Visit

- **Ambulatory**
  - Primary Care Visit

- **Acute**
  - Hospitalization for AMI
  - Cardiology Visit

- **Peri-Procedural**
  - Surgeon Visit
  - Hospitalization for Elective CABG
  - Surgeon Follow-up
  - Cardiology Visit

- **Ambulatory**
  - Endocrinology Visit

Legend:
- Yellow: Traditional Encounter
- Red: Digital Encounter with Red Alert
- Blue: Digital Encounter
- Light Blue: Caregiver Digital Interaction
DigiM Maturity Momentum™ – Select Providers (National)

Relative maturity levels based on strength of vision and strength of execution.

Note: Size of bubble indicates relative size of the organization in the sample.
# DigiM – Maturity Momentum™ – Digital Initiatives

(Select Providers)

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<tr>
<th>Section</th>
<th>Digital Initiative</th>
<th>Provider 1</th>
<th>Provider 2</th>
<th>Provider 3</th>
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BEYOND JUST VIDEO

- Artificial Intelligence
  - Digital Assistants
    - Voice
    - Chatbots
  - Robotic Process Automation
- Remote Patient Monitoring
  - Sensors
    - Ingestible
    - Wearable devices or in clothing
    - Implantable
RPM

- Inclusion criteria
- Wearables/Setup
- Monitoring
- Escalation
- Monthly CCM

REMOTE PATIENT MONITORING

- HTN
- DM
- CHF
RPM MEDICARE REIMBURSEMENT

CPT codes for 2019 to support RPM

99453
- $17.62 one-time practice expense
- Set up and patient education on use of RPM equipment

99454
- $58.38 monthly practice expense
- Cost of devices and tools that supply transmission of daily readings or programmed alerts

99457
- $48.42 monthly direct expense
- At least 20 mins/month of remote physiologic monitoring treatment management services
- Can be billed by qualified professional OR clinical staff

AMA 2020 Telehealth CPT Codes
- 6 CPT Codes for patient-initiated digital communications & online evaluation services
- 2 CPT Codes supporting home blood pressure monitoring
BEYOND JUST VIDEO

- Nextgen Kiosks
  - Full Diagnostics – Lab/Xray
  - Self Cleaning
  - Full Automation
  - Self-Driving Kiosks
- Virtual Reality
  - Holodeck experience
  - Tackle/sensory i/o with wearables
- Robots
  - Companionship
  - Healthcare assistant
NEXT-GEN TECHNOLOGY

• 3D printing
  • Sports equipment
  • Orthotics
  • Artificial body parts
  • Shoe inserts
  • Dental/Vision/Hearing
  • Bioprinting
• Personal Systems
  • Telehealth ready
  • Sanitizable
  • Easy to use
STARLINK
**XR-1 Technology Highlights**

- Deep learning capabilities using cloud brain (HAROX)
- NLP, CV for face/object/posture/emotion recognition, Visual Simultaneous Location and Mapping (VSLAM)
- Visual feedback manipulation for precise grasping/motion/pressing movements
- 3D semantic map for grasping/motion
- Vertical domain knowledge & AI services
- Accesses cloud brain technology via RCU (Robot Control Unit)

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**Compliance Control**

- Smart Compliant Actuator (SCA) on each Joint
- Total of 34 Actuators in XR-1
- Auto Balancing and Anti-Collision capabilities

**Speak**

- Mic Array for precise voice recognition
- Multiple language and multiple accent support
- Advanced Semantics with Emotional Intelligence

**Move**

- Lidar, 2D/3D camera, and multiple sensors
- Cloud-Based SLAM/VSLAM technologies
- Self navigation and obstacle avoidance

**See**

- Multi-Layer 2D/3D Visual Perception
- 2D recognition technology
- 3D depth sensing, environment sensing
THANK YOU